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Airway Assessment and Bag-Mask Ventilation: An Objective Structured Clinical Examination

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AIRWAY ASSESSMENT AND BAG-MASK VENTILATION: AN OBJECTIVE STRUCTURED CLINICAL EXAMINATION

by

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ABSTRACT

Airway assessment and bag-mask ventilation are critical components to the foundation of an anesthesia provider's airway management. The SRNA may find difficulty in efficiently providing these skills when entering the clinical atmosphere, which could potentially lead to delayed patient care, adverse patient outcomes, and loss of confidence in the SRNA's abilities. USM's nurse anesthesia faculty recognized the need for an OSCE in airway assessment and BMV. The OSCE was developed and targeted at first-year SRNAs prior to entering clinical, with aims to increase competence, prevent delays in care, and prevent adverse patient outcomes.

The airway assessment and BMV OSCE was provided to four USM nurse anesthesia faculty, two clinical site preceptors, 19 first-year SRNAs, and 18 second-year SRNAs with an anonymous evaluation survey. There were 24 participants to complete the survey, and 100% of participants agreed that the OSCE was presented clearly, contained evidenced-based information that is relevant to current anesthesia practice, and addressed proficiencies necessary for first-year SRNAs entering clinical. Open-ended feedback resulted in common themes of the OSCE being informative and thorough, great for the transition into clinical, as well as a suggestion to edit the OSCE to make certain areas stand out better for importance. Based on the reviewed literature and survey results, it is concluded that the airway assessment and BMV OSCE could potentially positively impact first-year SRNAs and their transition into clinical, and ultimately impact the outcomes of patients.

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DEDICATION

Kristen

I would like to dedicate this project to a few special people in my life who have been my support system not only during the process of this project, but also my journey through anesthesia school, and most importantly, through life. First, I would like to thank Ally, my project partner and partner-in-crime, for always being there for me and making sure I did not have to survive this journey alone. You have been an amazing teammate. Second, I would like to thank my loving mom and dad for inspiring me to always push myself and never give up. Your endless love and support mean more to me than you will ever know. Lastly, I would like to thank my very best friend, my husband, for your dedication to me. I could not have done this without you and your constant support. Your unconditional love and encouragement have kept me motivated and I am forever grateful.

Leigh Allyson

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LIST OF ABBREVIATIONS

AACN	American Association of Colleges of Nursing
AANA	American Association of Nurse Anesthetists
APL	Adjustable Pressure-Limiting
ASA	American Society of Anesthesiologists
BMV	Bag-Mask Ventilation
CCAT	Common Clinical Assessment Tool
CE	Continuing Education
COA	Council on Accreditation of Nurse Anesthesia Educational Programs
CRNA	Certified Registered Nurse Anesthetist
DNP	Doctor of Nursing Practice
EBP	Evidence-Based Practice
IRB	Institutional Review Board
NAP	Nurse Anesthesia Program
OSCE	Objective Structured Clinical Examination
OR	Operating Room
SRNA	Student Registered Nurse Anesthetist
USM	The University of Southern Mississippi

CHAPTER I – INTRODUCTION

According to the American Association of Nurse Anesthetists (AANA), there are currently 121 Nurse Anesthesia Programs (NAP) between the United States and Puerto Rico. Of those programs, approximately 2,400 students graduate each year. These programs differ in their length of curriculum and required hours of clinical experience (American Association of Nurse Anesthetists [AANA], 2020). David Roy, a clinical instructor for Student Registered Nurse Anesthetists (SRNA), explains how some programs vary as far as the setup of didactic courses and timing of clinical experience. He goes on to stress the hardships that students face when combining the theory of anesthesia, and then putting that knowledge into hands-on practice. Something that has been beneficial for Roy's students is exposing them to an anesthesia *environment* by use of a simulation lab. Roy proclaims, "Simulation work is the frontier for learning new skills and crisis training" (Roy, 2017, para. 4). As airway management is on the forefront of every student anesthetist's mind, these skills, even bag-mask ventilation (BMV), can be very difficult for the novice, and it requires practice over time to become efficient (Roy, 2017).

Faculty at The University of Southern Mississippi's (USM) NAP recognize similar issues in students when transitioning from the classroom to clinical on airway management. In efforts to address these concerns, an Objective Structured Clinical Examination (OSCE), a type of educational tool, was created and geared towards specific airway skills. This instrument is unique in the fact that students can practice these skills in the simulation lab before stepping foot into an operating room (OR). The goal is to provide students with this educational opportunity to potentially build competence and

confidence when entering clinicals, as well as ultimately potentially increase patient safety related to student skillset.

Problem Description

Background of the Problem

According to Mumma et al. (2018), in the perioperative arena, recognition of a potentially difficult airway and efficient BMV are both high-frequency and foundational skills of the Certified Registered Nurse Anesthetist (CRNA). Utilization of this critical skill set by the novice SRNA may initially be difficult to manage and adapt to when entering the clinical setting. While many NAPs provide their students with simulation experience as a means of practicing to become proficient with skills, SRNAs have still been found to lack competence when facing certain clinical challenges in real-life scenarios. Evidence shows that many healthcare professionals do not provide adequate BMV, such as delivering insufficient volumes or rates and not recognizing that ventilation is inadequate (Mumma et al., 2018).

Statement of the Problem

When the SRNA is not able to recognize a difficult airway or fails to provide efficient BMV, there is a potential for delayed patient care, adverse patient outcomes, and loss of confidence in the SRNA's personal abilities (Wunder, 2016). Nurse anesthesia professors at USM have identified the need and lack of an OSCE for BMV and identification of difficult airways (M. Collins, personal communication, 2020). In an attempt to ease the transition from the classroom to the clinical setting, an OSCE was developed and proposed as an addition to the USM NAP curriculum to potentially bridge the gap as an effort to give SRNAs more confidence and competence as they enter

clinicals and, more importantly, help to prevent delayed care or adverse patient outcomes related to incompetent skills. Similarly, these improvements have the potential to lead to a reduction in supplies used and decreased costs associated with patient care. An OSCE, which is a clinical assessment created to evaluate a variety of skills and knowledge utilized in clinical practice, structures components of competence for a specific skill to achieve standardization and better prepare students for the clinical setting (Mitchell & Jeffrey, 2013, p. 5). By providing an OSCE, SRNAs will have access to a detailed checklist on how to properly recognize a potentially difficult airway and efficiently bag-mask ventilate and a video demonstrating the skills and their utilization in a clinical simulation. The OSCE will be a standardized tool that SRNAs can use as a guide in this specific skill area while practicing in the simulation lab and into their clinicals.

Significance of the Problem

As of 2019, there are currently 121 NAPs that are accredited by the Council on Accreditation of Nurse Anesthesia Educational Programs (COA), and these programs graduate more than 2,400 students into the workforce each year (AANA, 2019). In closed-claims cases involving CRNAs, respiratory events were found to be the most frequent cause of adverse events at 34% of claims, and 81% of the respiratory events were found to be preventable (Larson et al., 2018). SRNAs beginning clinicals with a strong knowledge base and increased amounts of practice with guidelines to help with this subject matter is of upmost importance. Building this foundation has the potential to positively affect the students' skills and continue with them after they graduate. As the evidence shows, airway management is one of most, if not the most, important skills of an anesthetist; therefore, CRNAs must acquire and maintain competency in managing a

difficult airway as an essential scope-of-practice skill (Larson et al., 2018). A high level of self-efficacy and confidence has been found to positively promote the transition of an SRNA into practice as a CRNA, and the same can be said for the transition of the SRNA into the clinical setting (Tracy, 2017).

Available Knowledge

A review of current available knowledge and clinical evidence was conducted to better understand the importance of airway assessments and BMV, the knowledge gap between the classroom and the clinical setting, the effectiveness of OSCEs, and the impact on SRNAs and their patients. The following databases were used: CINAHL, MEDLINE, EBSCOhost, and Google Scholar. The publication years were limited to between 2015 and 2020. Searches using the key terms student registered nurse anesthetists, difficult airway, airway assessment, bag-mask ventilation, and objective standard clinical evaluation were conducted in the various databases.

Airway Assessment

There are various predictors that have been found to aid the anesthetist in determining if a patient may have a difficult airway. Baresh et al. (2017), Hung et al. (2016), and Nagelhout and Elisha (2018) agree that some of the most used predictors include, Mallampati class score of 3 or greater, thyromental distance less than three fingerbreadths, small mouth opening, decreased cervical spine movement, poor dentition, and neck circumference greater than 43 centimeters. Baresh et al. (2017) also mentions that examination for a prominent “overbite,” voluntary anterior protrusion of the mandible, highly arched palate, decreased mandible compliance, and short neck length are other useful predictors. While these tests do not always correctly determine the

difficulty level of every patient's airway, they are successful in many situations to lead the anesthetist to be prepared for a potential difficult airway situation. By being prepared with a video laryngoscopic device, such as the GlideScope®, and/or other difficult airway supplies, critical time can be saved and the safety of the patient can be further ensured. In a closed claims study completed by the American Society of Anesthesiologists (ASA), the failure to predict difficulties before airway management was found to be the single most important factor likely to lead to failure to intubate and oxygenate a patient. Research concludes that human deficiencies, such as with judgement, planning, equipment, communication, and training, are a main factor in the occurrence of adverse patient outcomes (Hung et al., 2016). Evidence based, peer reviewed research related to airway assessment provides a foundation of research and current clinical practice for the development of an airway assessment OSCE.

Bag-Mask Ventilation

Nurse anesthetists are trained with the goal of being proficient in airway management, and BMV is a foundational skill that is important to master quickly in the clinical area. BMV has been found to be a *blind spot* in practice related to its subjectivity in the eye and hands of the provider. There are more guidelines and studies related to intubation of difficult airways in comparison to those centered on BMV (Nielson & Lim, 2019). Despite the lack of abundance in those current guidelines, it is important for providers to recognize that some predictors of difficult intubation can also be indicators that there may be difficulty with BMV (Hung et al., 2016). Baresh et al. (2017) and Nagelhout & Elisha (2018) agree that the following are important risk factors or indicators of difficult BMV: impeded mask seal causing a leak, obesity, age greater than

55, no teeth, sleep apnea, snoring, decreased lung compliance, and upper or lower airway obstructions.

In regards to the technique of BMV, Baresh et al. (2017), Butterworth et al. (2018), Nagelhout and Elisha (2018), and Saddawi-Konefka et al. (2015) are all in agreeance that the one-handed *C-E* technique is the most utilized method because it gives the provider a free hand to use as needed. Butterworth et al. (2018) and Nagelhout and Elisha (2018) describe this technique by beginning with the left thumb and index finger placed around the collar of the facemask at the mask bridge and chin curve, which forms the letter *C*. Simultaneously, the left side of the mask should be compressed onto the face with the left-hand palm. The middle and ring fingers are placed on the mandible to help compress the mask to the face and raise the chin, while the fifth finger is placed at the angle of the mandible to provide an anterior jaw thrusting maneuver. The middle, ring, and fifth fingers form the letter *E* when correctly placed on the patient's face.

When ventilation difficulty is experienced with the one-handed technique, a two-handed technique can be used to adequately ventilate the patient. This method provides a better seal and produces higher tidal volumes, which both increase chances of adequate ventilation (Saddawi-Konefka et al., 2015). Butterworth et al. (2018) and Nagelhout and Elisha (2018) describe the two-handed technique by beginning with encircling the collar of the mask with the thumb and index finger of both hands, which creates a seal between the mask and face. The middle and ring fingers of both hands are used to grasp the mandible by pulling from below and assisting with a jaw thrust maneuver, while the fifth fingers of both hands are used to grip the angles of the mandible, which completes the jaw thrust. A second provider manages the anesthesia machine and bag, so that the

primary provider can fully control the patient's airway and ventilation. When airway difficulty is encountered and no second anesthesia provider is available, the two-handed method can be utilized by the primary provider after setting the mechanical ventilator to deliver positive pressure breaths (Saddawi-Konefka et al., 2015).

Prior to initiating BMV on an apneic patient, the adjustable pressure limiting (APL) valve must be utilized in order to deliver the patient efficient positive-pressure ventilation. The APL valve is a safety feature that regulates pressure within the anesthesia circuit when a provider is manually ventilating a patient (D'Mello et al., 2019). After creating an efficient mask seal to the patient's face, the provider must use the anesthesia circuit bag and regulate the APL valve to generate positive pressure ventilation. The APL valve is partially closed by the anesthetists to increase pressure up to 15-20cm H2O to overcome airway resistance and provide manual respirations with the bag. The goal is to create enough pressure to overcome resistance without suffering the negative consequences such as gastric inflation, barotrauma, pulmonary compression, or gastric regurgitation (Thomas et al., 2017).

When ventilating a patient, the anesthesia provider must be able to recognize when they are adequately ventilating a patient as well as when their efforts are failing. Butterworth et al. (2018) and Nagelhout and Elisha (2018) agree that minimal or no chest movement and inadequate or diminished end-tidal carbon dioxide (ETCO2), and lack of condensation in face masks are important indicators of inadequate ventilation during BMV. Nagelhout and Elisha (2018) mentions reduced or absent breath sounds and decreasing oxygen saturation as other indicators of inadequate ventilation to quickly identify during BMV. Butterworth et al. (2018) and Nagelhout and Elisha (2018) also

agree that if the provider recognizes that ventilation is inadequate, there is a proper sequence of steps to follow in efforts to regain control of the airway. These steps include: assuring proper positioning of the patient, attempting ventilation with left hand with mask strap on the right side to improve mask seal, reposition head into sniffing position, placing oral or nasal airway, two-handed mask technique, consider placement of a supraglottic device, consider awakening the patient, and finally, proceed with cricothyrotomy ventilation and intubation becomes impossible. Evidence based, peer reviewed research related to BMV skills provides a foundation of research and current clinical practice for the development for a BMV OSCE.

Objective Structured Clinical Examination

OSCEs serve as a means to allow students to be able to have guidelines and steps to follow and use as a tool. Students can utilize these instructional aids as they strengthen their skills in the simulation lab, which is an environment where there is no real patient and no threat to patient safety (Mitchell & Jeffrey, 2013). Specifically, there is growing use of simulation as a means to evaluate and bridge the gaps that are found in the SRNA's skills during their transition from the classroom to the clinical setting. By providing the students with an OSCE prior to beginning clinicals, the students' competency can be assessed and their confidence can be increased related to a higher level of preparedness for clinicals. Insurmountable benefits for faculty, students, preceptors, and patients have been found after implementation of OSCEs (Wunder et al., 2014).

OSCEs are created by analyzing and summarizing the best evidence-based practice (EBP) found in practice. EBP encompasses certain aims that are essential when

improving the delivery of care to patients, such as safety, patient-centered, effectiveness, efficiency, timeliness, and equity. Changes in how we care for patients are necessary to ensure that the best practice is utilized to yield the best possible outcomes. Alice Magaw believed that only practitioners with experience pertain the knowledge applicable to participate in this skill-level (Goode, 2015).

The COA recognized that there is a lack of standardized evaluations for the assessment of SRNAs by their clinical instructors. They formed a group to create the Common Clinical Assessment Tool (CCAT), which will serve as a standardized tool to improve consistency in clinical evaluation and assess competency in the clinical skills of SRNAs (Elisha et al., 2020). Though this tool is created to be used after the SRNA has entered the clinical setting, the CCAT resembles the OSCE in that it assesses skills and knowledge and allows for a chance to recognize strengths and weaknesses. The OSCE was created with similar goals in mind as a way for the SRNA to test themselves and make certain they are prepared for clinicals ahead of time, which will positively impact their experience in clinicals. Evidence based, peer reviewed research related to OSCE tool implementation provides a foundation of research and current clinical practice for the development of an OSCE itself.

Impact on Student Registered Nurse Anesthetists

During their time in a NAP, students face rigorous curricula, relational and emotional demands, financial strain, sleep deprivation, altered living routines, and lack of leisure time. The changes that SRNAs experience typically result with heightened stress, which can lead to negative influences on some student's mental and physical health, academic performance, self-confidence, and personal lives. Self-efficacy has been found

to positively correlate with higher levels of wellness, better ability to set goals, increased persistence in facing barriers, and ease with recovering from setbacks (Griffin et al., 2017). Clinical assessment tools have been found to help improve consistency with clinical evaluations and assessments. They also bring the SRNA's attention to areas that they have strengths in and areas in which they need more practice (Elisha et al., 2020). The recognition allows for self-efficacy and encourages the SRNA to practice more in the areas they have weaknesses, which leads to increased preparedness when entering clinical practice. These tools also allow for an extra chance to ask questions and clear up any misunderstandings, which could have been overlooked without the utilization of these tools.

With the use of OSCEs, SRNAs are able to gain more confidence in their skills through practice and validation of acquired skills, as well as, insight into the tasks in which they need more practice (Wunder et al., 2014). OSCEs can also inform the student on how to approach difficult situations before they begin encountering them with a live patient in the clinical setting. By simply having even a small amount of knowledge on how to act, students will not feel as overwhelmed when attempting to control the situation alongside their preceptor (Sola et al., 2017).

Impact on Patients

Through the use of OSCEs with SRNAs, the benefits for patients are strictly positive. OSCEs summarize and evaluate the SRNAs acquisition of skills; therefore, they serve as a way to show where improvements in the SRNAs skills need to be made (Wunder et al., 2014). By catching gaps in students' knowledge early, an improvement in the safety of future patients is potentially made. The specific nature of the OSCE focuses

on control of the airway and the pertinent skills of the SRNA. As mentioned above, the majority of closed claims involving CRNAs found were respiratory events, and 81% of those events were found to be preventable (Larson et al., 2018). By providing the SRNA with a tool to check their knowledge, practice their airway assessment and BMV skills, and better prepare for clinicals, there will be potential for decreased adverse patient outcomes and reduced occurrences of delayed patient care.

Rationale

OSCEs have been researched and proven to increase student's preparedness for entering the clinical area following the didactic portion of their programs. OSCEs are based on the best evidence-based practice found during research, which has a common goal of providing safe, patient-centered care. The implementation of this intervention is expected to be successful because it centers around increasing the knowledge and improving the skills of SRNAs, which will ultimately lead to increased patient safety, improved student confidence, prevention of delayed care, and decreased adverse patient outcomes.

Learning Theories

Learning theories are used as guides in various teaching and training environments. These theories describe the structure and principles that work to describe and explain how people learn. One learning theory that OSCEs most closely align with is the Cognitive Learning Theory, which describes learning as an internal process that focuses on understanding, thinking, organizing, and consciousness. This theory is found to be associated with changes in the capacity and capability of the person that will respond. It involves students learning to problem solve, explore and process information,

and eventually active learning, which allows them to search for new information and review past experiences to better understand them. Another theory that can be used to describe OSCEs is the Behavioral Learning Theory. This theory is based on the belief that learning is a change seen in observable behavior, which occurs when communication happens between a stimulus and a response (Aliakbaria et al., 2015).

In regard to OSCEs, SRNAs will be provided with important information pertaining to a specific topic and/or skill. It will be up to the student to utilize the information for learning purposes and take that knowledge to build and prepare to respond to certain situations in the clinical setting, which resembles the Cognitive Learning Theory. OSCEs also provide step-by-step guidance on specific skills, which allows for SRNAs to follow the steps for practice in the simulation lab. Repetitive practice of the skills and correlating knowledge will aid in making sure the SRNA learns the information, which resembles the behavioral learning theory.

DNP Essentials

The American Association of Colleges of Nursing (AACN) has developed a core set of curricular competencies to be incorporated into all programs that award the degree of Doctor of Nursing Practice (DNP). These foundational elements were condensed to highlight eight key areas of guidance for all advanced practice nursing roles, called the DNP Essentials (AACN, 2006). Each of these eight quality essentials have been outlined in Appendix C for reference. The fundamental essentials, as detailed by the AACN (2006), met in this project are described by the following:

- Essential I: Scientific Underpinnings for Practice, was met by researching and collecting data on best practices in recognition of a potentially difficult

airway and BMV. An OSCE was created using this evidence-based research to improve student competence and increase patient safety.

- Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice, was met by conducting extensive literature research and review in key areas such as airways assessments, BMV techniques, and OSCE implementation to produce quality, evidenced-based guidance in this project.
- Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health, was met with the implementation of this OSCE in the clinical areas specified, to produce a standardized tool for anesthesia students. The utilization and guidance of this OSCE will help prevent bad patient outcomes due to lack of preparedness by the student.
- Essential VIII: Advanced Nursing Practice, was met by providing anesthesia students with the education and skills in recognition of a difficult airway and BMV to provide quality patient care in the clinical area.

Specific Aims

The purpose of this project was to provide SRNAs with a structured and standardized assessment tool in the foundational skills of recognition of a difficult airway and BMV. There is an identified gap between the educational level and the early clinical-skill competency in these areas. With the creation of an evidence based OSCE that emphasizes these two essential steps in anesthesia, students are provided with the opportunity to repeatedly practice and assess competency in their skill set with step-by-step guidance in the comfort of the simulation lab. Utilization of this OSCE prior to

entering clinical settings aims to better prepare SRNAs when faced with the challenges and stressors of real-life clinical participation. The ultimate goal in achieving preparedness in these areas is to increase student competence and confidence, prevent delays in patient care, and of course, maintain patient safety.

The initial application of the airway assessment and bag-mask ventilation OSCE will be employed at a university by the first-year SRNAs who have yet to advance into the clinical portion of the program. These students will be issued a questionnaire to evaluate the overall ease and satisfaction of the OSCE, as well as potential experience gained. The true evaluation of the benefits students gain by utilizing this OSCE will be recognized once the SRNAs begin their clinical experience.

Summary

In an attempt to ease this transition from the classroom to the clinical setting, an OSCE will be developed and proposed as an addition to USM's NAP curriculum to potentially bridge the gap as an effort to give SRNAs more confidence and competence as they enter clinicals and, more importantly, help to prevent delayed care or adverse patient outcomes related to incompetent skills. Similarly, these improvements can lead to a reduction in supplies used and decreased costs associated with patient care. An OSCE, which is a clinical assessment created to evaluate a variety of skills and knowledge utilized in clinical practice, structures components of competence for a specific skill to achieve standardization and better prepare students for the clinical setting (Mitchell & Jeffrey, 2013). By providing an OSCE, SRNAs will have access to a detailed checklist on how to properly recognize a potentially difficult airway and efficiently BMV and a video demonstrating the skills and their utilization in a clinical simulation. The OSCE will be a

standardized tool that SRNAs can use as a guide in this specific skill area while practicing in the simulation lab and into their clinicals.

Lisa Wunder (2016) mentions that an essential piece to the layout and implementation of non-technical skills, is the decision of who, when, and where that would make this project most applicable and beneficial. As previously mentioned, the goal is to engage SRNAs before beginning clinical rotations to achieve a sense of security when providing these skills to real patients (Wunder, 2016). It is just as crucial to provide an environment, such as the simulation lab, for students to practice these skills where they feel comfortable, less demanded, and less stressed, as the clinical experience can easily impose (Griffin et al., 2017).

CHAPTER II – METHODS

Introduction

The purpose of this project was to provide SRNAs with a structured and standardized assessment tool in the foundational skills of recognition of a difficult airway and BMV. There is an identified gap between the educational level and the early clinical-skill competency in these areas. With the creation of an evidence based OSCE that emphasizes these two essential steps in anesthesia, students will have the opportunity to repeatedly practice and assess competency in their skill set with step-by-step guidance in the comfort of the simulation lab. Utilization of this OSCE prior to entering clinical settings aims to better prepare SRNAs when faced with the challenges and stressors of real- life clinical participation. The ultimate goal in achieving preparedness in these areas is to increase student competence and confidence, prevent delays in patient care, and of course, maintain patient safety.

Context

The initial application of this OSCE will be employed at USM by the first-year students enrolled in the NAP, who are currently within the intensive didactic portion of the program and have yet to begin clinicals. This program follows a three-year study with a doctoral degree obtained at graduation. There are 20 students admitted per year that are educated and guided by four currently practicing CRNAs. The first year of the program consists of classroom and online education with a multitude of anesthesia and doctoral research courses. The last two years of the program transition to a rigorous clinical-based curriculum while also engaging in the assigned didactic courses. Prior to starting clinicals in the second year, the hands-on experience is minimal, with the exception of a handful

of shadowing days at a few of the assigned clinical sites approaching the conclusion of the first year. Simulation experience is also embedded throughout the three-year program with a bulk of it strategically placed within the first year. Specifically, first-year students learn foundational elements related to airway assessment and BMV in courses NUR 837 and NUR 855, which are titled *Basic Principles of Anesthesia Practice* and *Clinical Correlation and Professional Facets*, respectively (The University of Southern Mississippi [USM], 2020).

The College of Nursing and Health Professions, located in Asbury Hall at USM, offers a technologically advanced simulation lab that includes a med-surg unit, intensive care, nursing home, and OR. The OR is specifically dedicated to the anesthesia program and is structured to resemble an authentic hospital-based OR, including a majority of the essential functioning equipment. This simulation lab is where first-year students establish their early hands-on experience with the anesthesia machines, intubation manikins, line placement equipment, and overall OR management skills. While the anesthesia professors are available for support and assistance, the lab remains accessible for independent practice.

Intervention

The foundation of this project was instituted following the identification of the lack of student preparedness in recognition of a potentially difficult airway and BMV skill when entering clinical rotations by the USM NAP faculty. In efforts to address this issue, an OSCE was created as a means to provide a learning method feasible for the identified population. Prior to designing the OSCE, best practices for airway assessment

and BMV were researched. With the prime evidence-based methods established from the analyzed research, the OSCE was developed incorporating this vital information.

The learning tool was designed with pertinent education and information provided prior to completing the assessment portion. A skill related scenario is presented, followed by a step-by-step process of objectives to achieve. Along with pictures provided as reference, a video was created to accompany the OSCE, with the same step-wise approach as the written document, to serve as a visual representation. A student debriefing form then follows, as well as an assessment rubric, specific to the scenario, was generated into the tool for self or peer evaluation purposes. After the OSCE assessment tool was authorized by committee members, it was submitted to and approved by The University of Southern Mississippi's Institutional Review Board (IRB), and referenced by protocol number IRB-20-360. Please refer to Appendix B for the OSCE.

After approval from the IRB, a panel of experts were carefully chosen for evaluation and feedback of the project. The panel included four currently practicing CRNAs and faculty members from USM's nurse anesthesia program and two clinical site preceptors with considerable clinical experience in airway assessments and bag-mask ventilation. The appreciable amount of background and experience that each of these experts possess offered this OSCE a diverse evaluation and critiquing owing to the previously mentioned skillsets. In addition to the expert perspective, a group of stakeholders associated with this project were sought to gain insight from a different vantage point. The stakeholders consisted of the first- and second-year USM anesthesia students who can provide diverse input as one group has yet to begin clinicals, while the other group is approaching a year of clinical experience. The project committee-

approved OSCE was electronically presented to the panel of experts and stakeholders along with a condensed literature review with associated references and evaluation form via Qualtrics©. Qualtrics© is an electronic survey platform that allows respondents to answer and submit the survey questions anonymously. The anonymous and confidential feedback was then recorded and analyzed for potential adjustments in project objectives. Results and changes were reported to the DNP project committee. The OSCE and summarized data were then presented and disseminated at USM School of Leadership and Advanced Nursing Practice DNP Research and Scholarship Day. At the conclusion of the project, any electronic and/or physical data and comments were deleted and destroyed.

Measures

This project will provide SRNAs with an expanded knowledge base and skillset, which has the potential to lead to increased confidence of the student, prevention of delayed patient care, and decreased adverse patient outcomes that are related to incompetent skills. After completion of the OSCE, students will be a better prepared and safe provider as they enter clinicals. The information within the OSCE is current and evidence-based, and it will provide SRNAs with the tools and skills that are required to correctly assess an airway and adequately BMV. The OSCE contains a rubric, learner goals, equipment needed for airway assessment and BMV, step-by-step process for each skill, associated references, and a patient scenario for simulation lab practice. The panel of experts and current USM SRNAs were given a survey to evaluate the OSCE and its effectiveness. The survey also provided an opportunity for feedback on any areas of the

OSCE that might require further focus or adjustments. The survey can be found in Appendix D and contains the following questions:

1. Do you consent to participation?
2. Check one that applies: CRNA or 1st year SRNA or 2nd year SRNA.
3. Is the information presented in the OSCE stated clearly and easily understood?
4. Does the OSCE provide information that is evidence-based and relevant to anesthesia practice today?
5. Does the OSCE address the pertinent proficiencies necessary for first year SRNAs preparing to enter clinicals?
6. Please provide any feedback or suggestions for this OSCE.

Analysis

The data obtained from the previously mentioned measures were organized to represent a portion of quantitative and qualitative results. The feedback was differentiated by whether the respondent is a student or an expert based on the following tools. The majority of questions on the survey address direct *yes* or *no* questions, which were analyzed and interpreted into percentages based on the number of replies to each question. These percentages illustrated a common theme of feedback. The final question of the survey, which allows for open-ended responses, resulted in a diverse series of answers. This qualitative data was arranged into a table for straight-forward, organizational purposes. The goal of these measures and analysis of data was to provide feedback on the overall quality and pertinent application of the OSCE, the potential

positive impact on the SRNA's skillset, and any effects the tool could have on the student in the clinical domain.

Ethical Considerations

Ethical considerations that should be taken into account include the USM NAP's desire to not implement the OSCE into the curriculum. The faculty could feel that the curriculum related to airway assessment and BMV that is currently in place is sufficient for the clinical preparation of SRNAs. If the OSCE were not a required part of the curriculum, SRNAs would not fully benefit from simulation related to airway assessment and BMV. Without this important knowledge base and strengthened skillset, students could potentially be less competent and possess a decreased level of confidence when encountering a real clinical situation. Prior to participating in the survey, respondents were ensured confidentiality and anonymity in regards to personal information and responses. There are no conflicts of interest. This project was submitted to the IRB to ensure ethical considerations.

Summary

The airway assessment and bag-mask ventilation OSCE was created after recognizing a lack of SRNA preparedness in these areas when facing initial clinical experience. The project was geared to provide anesthesia students at USM with a unique education and evaluation of skills after faculty acknowledged a need for the OSCE. Evidence-based research guided the construction of the tool and was then submitted and approved by the IRB. A panel of experts and stakeholders were electronically delivered the OSCE itself, as well as an anonymous survey provide feedback. Once data from the survey was obtained, it was organized to evaluate common themes in responses.

CHAPTER III – RESULTS

Introduction

When the SRNA is not able to recognize a difficult airway or fails to provide efficient BMV, there is a potential for delayed patient care, adverse patient outcomes and loss of confidence in the SRNA's personal abilities (Wunder, 2016). Nurse anesthesia professors at USM have identified the need and lack of an OSCE for BMV and identification of difficult airways (M. Collins, personal communication, 2020). The purpose of this project is to provide SRNAs with a structured and standardized assessment tool in the foundational skills of recognition of a difficult airway and BMV. There is an identified gap between the educational level and the early clinical-skill competency in these areas. With the creation of an evidence-based OSCE that emphasizes these two essential steps in anesthesia, students will have the opportunity to repeatedly practice and assess competency in their skill-set with step-by-step guidance in the comfort of the simulation lab. Utilization of this OSCE prior to entering clinical settings aims to better prepare SRNAs when faced with the challenges and stressors of real- life clinical participation. The ultimate goal in achieving preparedness in these areas is to increase student competence and confidence, prevent delays in patient care, and of course, maintain patient safety.

Steps of the Intervention

In efforts to formally create this OSCE for practice, evidence-based research was obtained in airway assessment and BMV. The peer-reviewed research was analyzed to provide guidance in developing the step-by-step tasks to accomplish these skills. The OSCE was constructed by first stating the outcomes and objectives of the project, then

providing background knowledge to complete the skills, and finally a debriefing followed by an assessment form complete the evaluation tool. Once the OSCE was finalized, a video was produced demonstrating the skills following the same steps referenced in the written documents, as a visual reference.

After the OSCE was evaluated and approved by DNP project committee members, it was then submitted to the IRB. Once approved by IRB, the tool was then ready to be evaluated by a panel of experts and stakeholders. The OSCE, along with a literature review and demonstration video, were electronically forwarded to these groups. After reviewing the assessment tool and literature, the respondents were asked to complete the survey attached to the email. The participants had to first consent to the questionnaire and were assured anonymity in their responses. The surveys were automatically uploaded to Qualtrics® and secured by a password protected computer. There were no changes from the proposed methodology sequence.

The survey was sent to a total of 43 people, including six currently practicing CRNAs, 19 first-year USM SRNAs, and 18 second-year USM SRNAs. A total of 24 participants completed the survey. In response to the first question on the survey, 100% of participants chose to consent to participation. In the second question, participants indicated whether they were a CRNA, first year SRNA, or second year SRNA. Of the total participants, 25% of participants were CRNAs, 20.8% were first year SRNAs, and 54.2% were second year SRNAs. Figure 1 shows the percentages of *yes* and *no* responses from participants for quantitative questions three through five. One hundred percent of the participants answered *yes* to the question: *Is the information presented in the OSCE stated clearly and easily understood?* One hundred percent of the participants also

answered *yes* to the question: *Does the OSCE provide information that is evidence-based and relevant to anesthesia practice today?* Lastly, 100% of participants answered *yes* to the question: *Does the OSCE address the pertinent proficiencies necessary for first year SRNAs preparing to enter clinicals?* Table 1 lists all qualitative responses received on the last question of the survey, which allowed the participants to provide any further feedback or suggestions for the OSCE not covered in the survey. Overall, positive qualitative feedback was received. Common themes of the participants' comments focused on the airway assessment and BMV OSCE information being very informative and thorough and great for students in their transition to clinicals. Other comments received touched on the great quality of the demonstration video and the helpfulness of the cognitive aid tips for recognition of a difficult airway. One constructive criticism comment received suggested editing the OSCE to make certain areas stand out better for importance. See Appendix E for a complete table of quantitative and qualitative responses for each question from all participants.

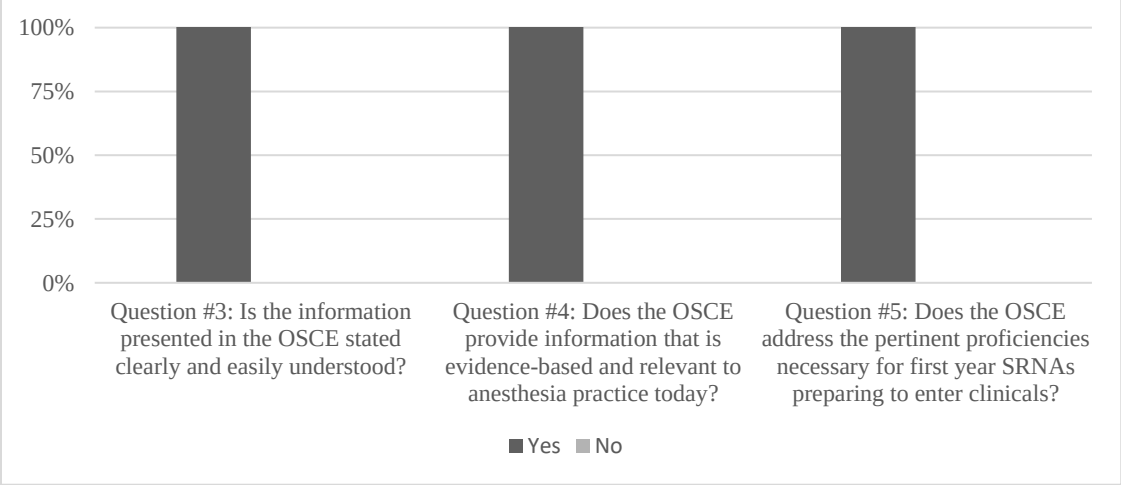


Figure 1. Responses to Survey Questions Three Through Five

Table 1

Responses to Survey Question Six

Participant Number	Type of Participant	Response to Question #6: Please provide any feedback or suggestions for this OSCE.
5	2nd year SRNA	Very good information, especially for students that have not entered clinical for hands-on experience yet!
7	2nd year SRNA	Very informative information that is easily understood.
8	2nd year SRNA	The information is very succinct and thorough. It was a good refresher on airway assessment.
10	CRNA	The cognitive aids used in the video to identify difficult airway were particularly useful for clinical transition.
19	CRNA	Excellent video demonstration!!
21	1st year SRNA	Good information, presented in a way that makes application easy
22	CRNA	On the OSCE pdf, in the pictures where there are lines and arrows, change the arrows and lines to bright green or red to make viewing easier. EXCELLENT JOB LADIES!
23	2nd year SRNA	Very informative and thorough. This would have been very beneficial as a first year student.

Note. Survey question six asks participants to: Please provide any feedback or suggestions for this OSCE.

Details of Process Measures and Outcome

Based on the responses from experts and stakeholders, there is 100% agreeance that the proposed OSCE on airway assessment and BMV could potentially address the concerns of first-year SRNAs lacking clinical skill in these areas. By including a panel of experts who have specific knowledge and background in airway assessment and BMV in the questionnaire group, responses to the survey carry critical importance to the basic

evaluation of the specific skills. Responses from the first- and second-year SRNAs allow for key insight from current anesthesia students on the effects that the airway assessment and BMV OSCE could potentially have on the outcomes of SRNAs' clinical experience. The combined agreeance from experts and stakeholders that this project provides current, EBP relevant to anesthesia and provides proficiencies necessary for first-year SRNAs to enter clinical, illustrates the concept that an airway assessment and BMV OSCE is an appropriate step to potentially address the gap between the didactic first year of the NAP and the start of clinicals.

Summary

Of the 43 perspective experts and stakeholders the OSCE and survey were sent to, 24 of those responded to the anonymous evaluation. From those responses, questions three through five's results were organized into a chart to easily evaluated the quantitative data. Qualitative results from question six were gathered into a table for straightforward viewing of the provided responses. Respondents provided essential feedback to evaluate the potential impact the OSCE can have on first-year SRNAs.

CHAPTER IV – DISCUSSION

Summary

Survey respondents unanimously agreed that the airway assessment and BMV OSCE was stated clearly and easily understood and that it contained evidence-based information that is relevant to anesthesia practice today. Additionally, all respondents agreed that the OSCE addresses the pertinent proficiencies that are required of first-year anesthesia students. A strength of this project is the participants that were involved in the airway assessment and BMV OSCE and provided feedback through the survey. The participants included CRNAs that are currently practicing and experts in airway assessment and BMV, second-year SRNAs that have experienced the transition into clinicals without access to the OSCE, and first-year SRNAs that are approaching the beginning of clinicals. Data from these three groups provides feedback from important stakeholders that can provide unique insight from those who would have access to the OSCE and those who would be preceptors of SRNAs that have utilized the OSCE. The purpose of this project is to provide a more uniform evaluation of first-year SRNAs for clinical by becoming proficient in airway assessment and BMV. Survey results from experts and stakeholders agree that this project meets key goals by potentially better preparing the first-year students and providing them with confidence and competence in these areas.

Interpretation

In examining the quantitative and qualitative feedback from participants, there is agreeance that the airway assessment and BMV OSCE, supporting documents, and demonstration video utilize the most current EBP to uniformly evaluate first-year

SRNAs. Based on the supporting literature review, these results conclude that implementation of the OSCE can potentially have a positive impact on stakeholders. In the future, the airway assessment and BMV OSCE and supporting documents have the potential to be used by any healthcare professionals with a job requiring them or with the potential to need to intubate or BMV patients. These professionals could include nurses, doctors, paramedics, EMTs, and other anesthesia providers. Another potential route for use in the future is as continuing education (CE) hours for licensed professionals.

Limitations

One limitation of this study was the small sample size, which potentially limited the total amount of critique received from survey participants. A larger sample size would have allowed for increased amounts of feedback to guide making improvements to the OSCE and demonstration video. Although there is a small sample size, by including experts in airway assessment and BMV as survey participants, it provides rich feedback for data. A second limitation of the study was related to the fact that all participants were faculty or students at or associated with USM, which could lead to potential bias. However, the USM anesthesia faculty also practices clinically and have the ability to assess student readiness, as well as knowing the foundational needs for students. The lack of evidence and research on OSCE implementation at other NAPs created another limitation to this study, but OSCEs are routinely used to evaluate nurse practitioners and can be analyzed to provide feedback in regard to the implementation to anesthesia programs. Despite the few limitations to this study, the strengths are essential to the quality of the research.

Conclusions

This OSCE has been submitted to USM's NAP for inclusion in their OSCE library. Along with independent simulation practice, this airway assessment and BMV OSCE could also be incorporated into NUR 837 and NUR 855 courses and other clinical preparation modules as part of teaching methods. The airway assessment and BMV OSCE as an educational tool and study could potentially be utilized further in extended research, such as evaluating student proficiency prior to use of the OSCE and after. The airway assessment and BMV OSCE could also be employed by other anesthesia programs, or even medical facilities, to provide a standard evaluation tool for training. The airway assessment and BMV OSCE intervention and correlating research has the potential to be the foundation to build upon other airway management skills for providers.

APPENDIX A – IRB Approval Letter

Office *of*
Research Integrity

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

118 COLLEGE DRIVE #5125 • HATTIESBURG, MS | 601.266.6576 | USM.EDU/ORI

NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI via the Incident template on Cayuse IRB.
- The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.

PROTOCOL NUMBER: IRB-20-360
PROJECT TITLE: Airway Assessment and Bag-Mask Ventilation: An Objective Structured Clinical Examination
SCHOOL/PROGRAM: School of LANP, Leadership & Advanced Nursing
RESEARCHER(S): Kristen Berry, Mary Jane Collins, Leigh Brantley

IRB COMMITTEE ACTION: Approved
CATEGORY: Expedited

7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

PERIOD OF APPROVAL: September 14, 2020

Donald Sacco Jr.

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

APPENDIX B – OSCE

ANESTHESIA OBJECTIVE STRUCTURED CLINICAL EXAM
Airway Assessment and Bag-Mask Ventilation

LEARNER OUTCOMES:

1. Be able to complete a thorough airway assessment
2. Be able to recognize a potentially difficult airway
3. Be able to perform safe and efficient bag-mask ventilation
4. Gain confidence in performing these clinical skills

DOMAINS: (Select up to 3)

Assessment – Pre/intra/post op	Evaluation of teaching
Consent	Formative evaluation - feedback
Communication	Interprofessional collaboration
Clinical skill	**Performance assessment**
Critical thinking	Progression evaluation
Didactic knowledge	Summative evaluation

PURPOSE:
Develop clinical skill in airway assessment and bag-mask ventilation.

LEARNER OBJECTIVES:

1. Identify patients at risk for a difficult airway.
2. Demonstrate confidence and proficiency in airway assessment and bag mask ventilation.
3. Appropriately develop a plan of care and interventions for a patient with a difficult airway.

INDIVIDUAL OR GROUP OSCE: Individual

REQUIRED READING and ASSOCIATED LECTURES:

1. Nagelhout: Chapter 24; pages 400-404

REQUIRED VIDEO: Please see link for video demonstration

REQUIRED PARTICIPANTS: Volunteer patient, Student examinee, Examiner

VENUE: University of Southern Mississippi- Hattiesburg Nursing Simulation Lab

STUDENT LEVEL OF OSCE: 1st year CRNA student

TIME ALLOTED: 30 minutes
(This time frame includes reviewing content outline, gathering supplies, and performing airway assessment and bag-mask ventilation sequence.)

CONTENT OUTLINE

CONTEXT:
You are assigned to Ms. Mary Jones. She is a 67 year old African American female, here at USM Memorial Hospital for a laparoscopic cholecystectomy. She weighs 118 kilograms and is 5'4" in height. Ms. Jones' medical history includes hypertension, obstructive sleep apnea (OSA), and obesity. On physical examination, you note that Ms. Jones is edentulous with redundant tissue in the face and neck area.

EQUIPMENT& SUPPLIES:
-Volunteer participant for airway assessment
-airway manikin
-reservoir bag connected to circuit
-APL valve on anesthesia machine
-face mask
-oral airway
-mask strap
-tongue blade
-shoulder rolls or ramping device

SITE SELECTION:
N/A

TASK STATEMENT:
Your task is to complete a thorough airway assessment on a participant, identify components of a potentially difficult airway, prepare equipment and supplies for bag-mask ventilation on a potentially difficult airway, and identify and perform the essential steps in efficient bag-mask ventilation on the airway manikin.

PROCESS

1a. Evaluate participant's airway with the following components:

Airway Examination Component	Indication of airway difficulty
Length of upper incisors	Relatively long
Relation of maxillary and mandibular incisors during normal jaw closure	Prominent "overbite"
Relation of maxillary and mandibular incisors during voluntary protrusion	Inability to protrude mandibular incisors anterior to maxillary incisors
Interincisor distance	Less than 3cm
Visibility of uvula	Not visible when tongue is protruded with patient in sitting position (Mallampati class III or greater)
Shape of palate	Highly arched or very narrow
Compliance of mandibular space	Stiff, indurated, occupied by mass, or non-resilient
Thyromental distance	Less than three ordinary fingerbreadths
Length of neck	short
Thickness of neck	Thick (greater than 43cm in circumference)
Range of motion of head and neck	Patient cannot touch tip of chin to chest or cannot extend neck

1b. Other indicators of difficult bag-mask ventilation

a. Mask seal impeded by beards, altered anatomy, or nasogastric tubes
b. Obstruction of the upper or lower airway
c. Obesity with redundant upper airway soft tissue and greater chest and abdominal mass compressing the lungs
d. Age greater than 55 related to loss of upper airway tissue elasticity
e. No teeth, leading to improper facial structure for the bag mask
f. Stiff lungs (increases in airway resistance and decreases in pulmonary compliance)
g. Sleep apnea or snoring

2. Determine if patient is at risk for difficult airway.

3. **Gather necessarily equipment in preparation for difficult bag-mask ventilation including oral airway, tongue blade, mask straps, shoulder rolls**

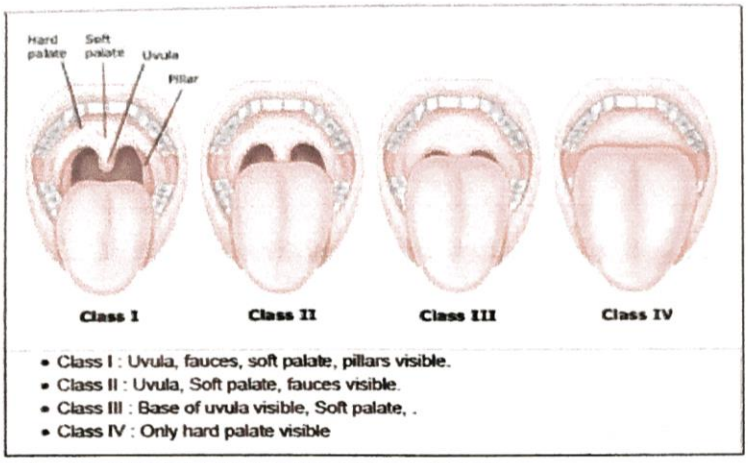
4. **Perform bag-mask ventilation on airway manikin beginning with one-handed technique:**
   a. Left thumb and index finger around the collar of the facemask at both the mask bridge and chin curve, while compressing the left side of the mask onto the face with the palm of the left hand
   b. Middle and ring fingers can be placed on the mandible to help compress the mask to the patients face and to raise the chin
   c. 5th finger placed at the angle of the mandible to provide an anterior jaw thrusting maneuver
   d. Once an adequate mask seal is obtained, close APL valve to no more than 20cmH20
   e. Allow the reservoir bag to inflate and squeeze reservoir bag with right hand to provide manual ventilation

   ****If difficulty with this technique, perform two-handed ventilation.***
   a. Thumb and index finger of both hands encircle the collar of mask to create a seal to the face
   b. Middle and ring fingers grasp the mandible, pulling from below and assisting with jaw thrust maneuver, while the little fingers of both hands grip the angles of the mandible to complete the jaw thrust
   c. 2nd provider must manage anesthesia bag

5. **Identify evidence of inadequate ventilation during BMV**
   a. Minimal or no chest movement
   b. Inadequate or deficient exhaled carbon dioxide (lack of condensation and spirometric reading)
   c. Reduced or absent breath sounds
   d. Decreasing oxygen saturation

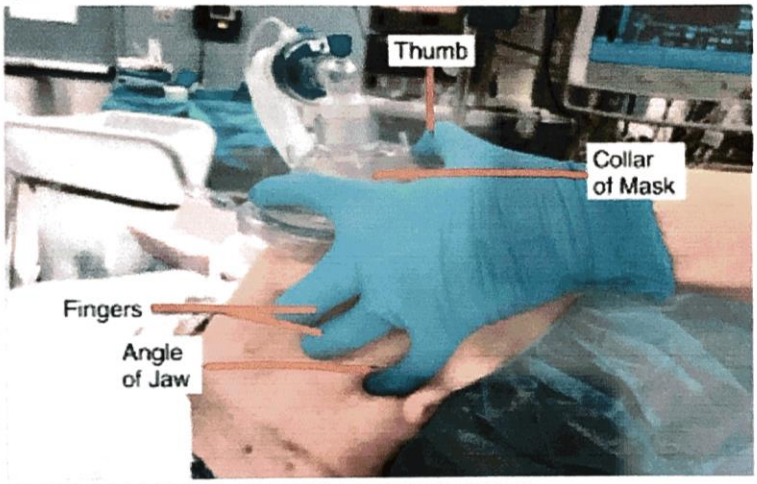
6. **Perform appropriate sequence of interventions if ventilation is inadequate:**
   a. Assure proper positioning of the patient that avoids compression of the airway
   b. Attempt ventilation with one (left) hand (can consider use of mask strap on opposite side of mask (right) to improve mask seal
   c. Reposition the head into sniffing position
   d. Place oropharyngeal airway (may consider earlier placement)
   e. Proceed with two-handed mask ventilation
   f. Consider placement of a supraglottic device and consider awakening patient
   g. Consider proceeding with cricothyrotomy access if ventilation and intubation becomes impossible

IMAGES:
MALLAMPATI CLASS

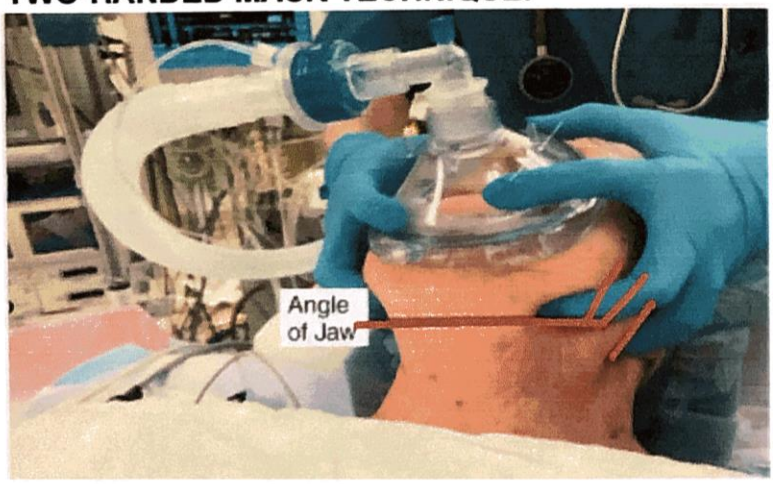


- Class I : Uvula, fauces, soft palate, pillars visible.
- Class II : Uvula, Soft palate, fauces visible.
- Class III : Base of uvula visible, Soft palate, .
- Class IV : Only hard palate visible

ONE-HANDED MASK TECHNIQUE:



TWO-HANDED MASK TECHNIQUE:



DEBRIEFING FORM:

1. Describe the objectives you were able to achieve.

2. Which objectives were you unable to achieve (If any)?

3. Did you have the knowledge and skill to meet objectives?

4. Were you satisfied with your ability to work through the simulation?

5. Do you feel this simulation has prepared you for clinical practice?

ASSESSMENT

RUBRIC FOR AIRWAY ASSESSMENT AND BAG-MASK VENTILATION

QUESTION & DEMONSTRATION STATION:

	TASKS	PASS	FAIL	COMMENTS
*	1. Performs thorough airway assessment			
*	2. Determines if patient is at risk for difficult airway and consequently difficult bag-mask ventilation			
*	3. Gathers appropriate supplies and equipment for anticipated difficult bag-mask ventilation			
*	4. Performs one-handed bag mask ventilation (include use with mask strap if difficulty ensues)			
	5. Adjust APL valve and provide manual ventilation with reservoir bag			
*	6. Appropriately identifies components of inadequate ventilation			
*	7. Performs appropriate sequence of interventions when inadequate ventilation is recognized including: a. Repositioning of patient b. Reposition of head into sniffing positing c. Apply mask strap d. Insertion of oral airway			
*	8. Performs two-handed mask technique			

Steps with * Must be properly completed. All steps must be completed/passed to receive a passing grade.

The OSCE by the student demonstrates foundational knowledge and clinical skill in recognition of a potentially difficult airway and bag-mask ventilation: (Circle one) **PASS FAIL**

Does the student need to repeat this OSCE at a later date to satisfy learning requirements? (Circle one) **YES NO Date to return for evaluation:** _____

EXAMINER: _____ DATE: _____

APPENDIX C – DNP Essentials

DNP Essentials	Clinical Implications
Essential One: Scientific Underpinnings	Research and collection of data on the evidence-based best practice related to the topic and presented through an OSCE to improve student competence and increase patient safety.
Essential Two: Organizational and Systems Leadership for Quality Improvement and Systems Thinking	Communication with a panel of experts regarding proposed OSCE containing best-practice guidelines for use by first-year SRNAs at USM.
Essential Three: Clinical Scholarship and Analytical Methods for Evidence-Based Practice	Use of literature research and review of current evidence-based practice to create and implement an OSCE containing a best-practice guideline.
Essential Four: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care	The goal of this project is to promote standardized evidence-based practice to improve first year NAP student clinical preparedness and increase correlating positive patient outcomes. This project was devised from evidence gathered using technology as a means to research this topic and the use of OSCEs.
Essential Five: Healthcare Policy for Advocacy in Health Care	This project advocates for an improvement in learning methods by utilization of an OSCE by students with a goal of increased positive health outcomes.
Essential Six: Interprofessional Collaboration for Improving Patient and Population Health Outcomes	Collaboration with a selected panel of experts based on their advanced knowledge and experience in practice.
Essential Seven: Clinical Prevention and Population Health for Improving the Nation's Health	Implementation of a standardized educational tool to improve the clinical preparedness of students and decrease the amount of bad patient outcomes related to student error or delayed care.
Essential Eight: Advanced Nursing Practice	Educating SRNAs on BMV skills and difficult airway assessment and recognition to increase their clinical preparedness and the quality of patient care that they provide in the clinical area.

APPENDIX D – Survey Questions

1. Do you consent to participation?

Yes or No

2. Check one that applies:

CRNA or 1st year SRNA or 2nd year SRNA

3. Is the information presented in the OSCE stated clearly and easily understood?

Yes or No

4. Does the OSCE provide information that is evidence-based and relevant to anesthesia practice today?

Yes or No

5. Does the OSCE address the pertinent proficiencies necessary for first year SRNAs preparing to enter clinicals?

Yes or No or N/A

6. Please provide any feedback or suggestions for this OSCE:

_____

_____

_____

_____

_____

APPENDIX E – Survey Responses

Participant Number	Question #1	Question #2	Question #3	Question #4	Question #5	Question #6
1	Yes	2nd year SRNA	Yes	Yes	Yes	
2	Yes	2nd year SRNA	Yes	Yes	Yes	
3	Yes	1st year SRNA	Yes	Yes	Yes	
4	Yes	1st year SRNA	Yes	Yes	Yes	
5	Yes	2nd year SRNA	Yes	Yes	Yes	Very good information, especially for students that have not entered clinical for hands-on experience yet!
6	Yes	2nd year SRNA	Yes	Yes	Yes	
7	Yes	2nd year SRNA	Yes	Yes	Yes	Very informative information that is easily understood.
8	Yes	2nd year SRNA	Yes	Yes	Yes	The information is very succinct and thorough. It was a good refresher on airway assessment.
9	Yes	CRNA	Yes	Yes	Yes	
10	Yes	CRNA	Yes	Yes	Yes	The cognitive aids used in the video to identify difficult airway were particularly useful for clinical transition.
11	Yes	2nd year SRNA	Yes	Yes	Yes	
12	Yes	2nd year SRNA	Yes	Yes	Yes	
13	Yes	2nd year SRNA	Yes	Yes	Yes	
14	Yes	1st year SRNA	Yes	Yes	Yes	
15	Yes	2nd year SRNA	Yes	Yes	Yes	

16	Yes	1st year SRNA	Yes	Yes	Yes	
17	Yes	2nd year SRNA	Yes	Yes	Yes	
18	Yes	CRNA	Yes	Yes	Yes	
19	Yes	CRNA	Yes	Yes	Yes	Excellent video demonstration!!
20	Yes	CRNA	Yes	Yes	Yes	
21	Yes	1st year SRNA	Yes	Yes	Yes	Good information, presented in a way that makes application easy
22	Yes	CRNA	Yes	Yes	Yes	On the OSCE pdf, in the pictures where there are lines and arrows, change the arrows and lines to bright green or red to make viewing easier. EXCELLENT JOB LADIES!
23	Yes	2nd year SRNA	Yes	Yes	Yes	Very informative and thorough. This would have been very beneficial as a first year student.
24	Yes	2nd year SRNA	Yes	Yes	Yes	

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